

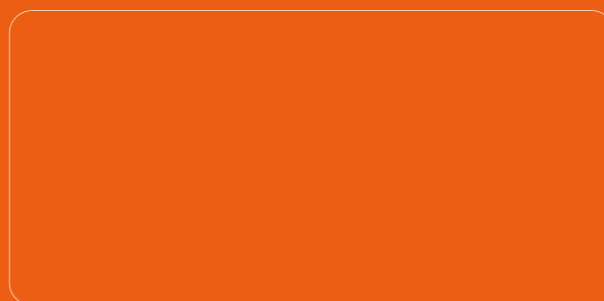


BEYOND THE BEST

Powertrain Division



Headquarters
Powertrain Division
9 Sungsanpaechong-ro, Sungsan-gu,
Changwon, 641-315, South Korea
TEL: +82-55-280-4650
FAX: +82-55-280-8997
Web: www.hanwhatechm.co.kr
email: Jaeheon.jung85@hanwha.com



Energy for your life

Face of all the power of the sun as the sea
Let a Able to dream bigger tomorrow than today
let's share the happiness together
Republic of Korea to the sun rises on a warm Hanwha



@ TS & ISO Certificate



@ Hanwha TechM History

- Feb.1953** Founded the Shinhan Bearing Industry Inc. with capital investment of 5 million won
- May.1964** Changed the company name to Korea Bearing industry Inc.
- Mar.1982** Changed the company name to the Korea Machinery Inc.
- Sep.1987** Founded Korea Precision Inc., a joint venture with NSK Inc., Japan
- Sep.1988** Founded Korea Beakers Inc., a joint venture with Beakers Inc., US
- Nov.1991** Acquired UNIVERSAL BEARINGS INC., American corporation
- Oct.1994** Changed the corporate name to Hanwha Machinery Inc.
- Nov.1995** Established the partnership with SKF, a Swedish company and founded Hanwha Car Parts Inc.
- Jun.1997** Acquired ISO 9001 certification
- Oct.1999** Obtained ISO 14001 authentication
- Nov.2000** Moved the headquarter to Changwon city
- Nov.2005** Exceeded 20 million dollars in export
- Dec.2005** Completion of Asan factory
- Nov.2006** Exceeded 70 million dollars in export and won the industrial medal of honor, the Presidential honor and Ministerial honor
- Jan.2007** Changed the corporate name from Hanwha Machinery Inc. to Hanwha TechM Inc.
- Dec.2008** Exceeded 100 million dollars in export and won the industrial medal of honor, the Presidential honor and Ministerial honor.
- Jun.2009** Won the GM 2008 SOY
- Mar.2010** Won the GM 2009 SOY
- Nov.2013** Established U.S and China Production Corporation



Feb.1953
Founded the Shinhan Bearing Industry Inc. with capital investment of 5 million won



Jun.1997
Acquired ISO 9001 certification



Dec.2008
Exceeded 100 million dollars in export and won the industrial medal of honor, the Presidential honor and Ministerial honor.



Jun.2009, Mar.2010
Won the GM 2008, 2009 SOY for 2 years in a row.

@ Business Item & Area

- **Transmission**
 - Automatic T/M Assembly Line
 - Manual T/M Assembly Line
 - T/M Final Test Machine
- **Engine**
 - Engine Assembly Line
 - Cylinder Head Assembly line
 - Cam Carrier, Intake Manifold, Tappet Line
 - Cold & Hot Test Machine



@ Major Clients



Transmission Assembly Line

Main Line
Test & Button up Line
Case Sub Line
Rotating Clutch Sub Line

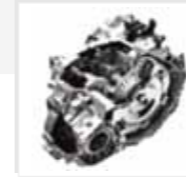
Reaction Carrier Sub Line
Input Carrier Sub Line
Output Carrier Sub Line
Valve Body Sub Line

Center Support Sub Line
Output Shaft Sub Line
Input Shaft Sub Line
Differential Carrier Sub Line

• Manual
• Transmission



• Auto
• Transmission



• Hybrid
• Transmission



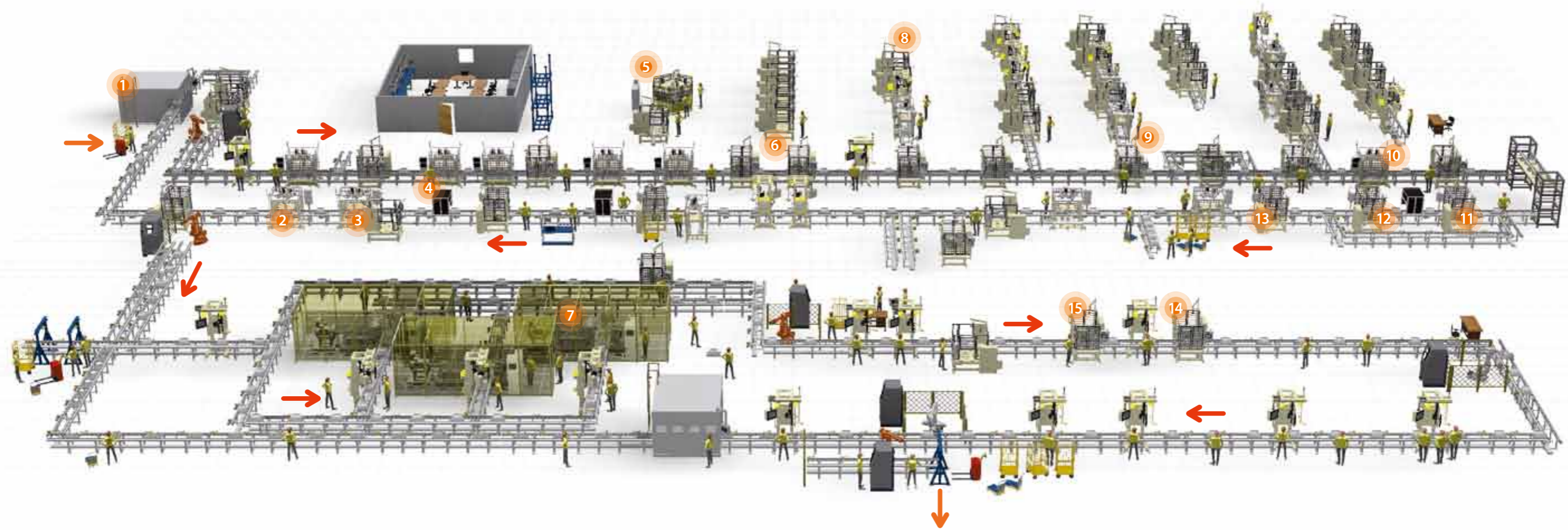
• Dual
• Clutch
• Transmission



• Continuously
• Variable
• Transmission



Machine Category



Installed Shop Overall View



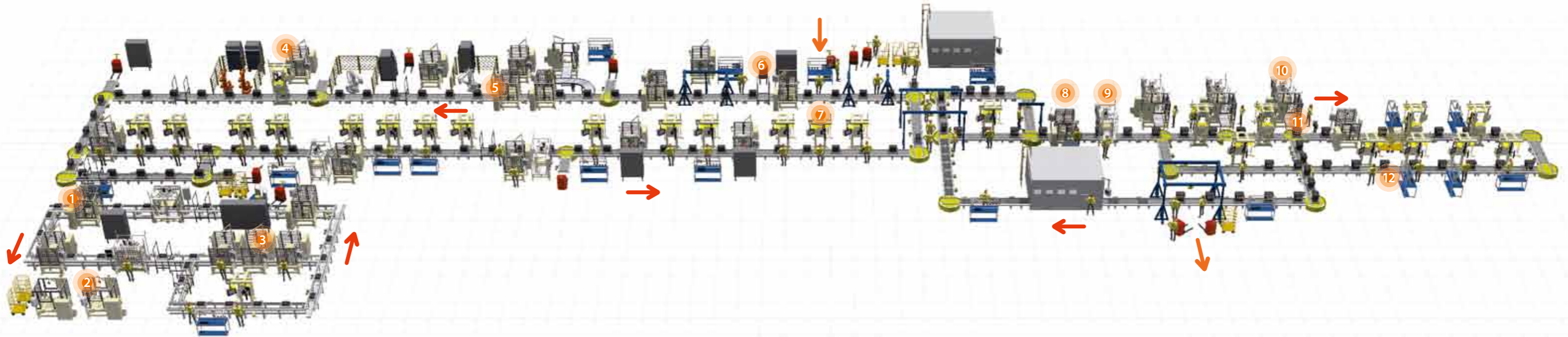
Engine Assembly Line

Main Line
Cylinder Head Assembly Line
Piston Sub Line

Crank Shaft Sub Line
Intake Manifold Sub Line
Exhaust Manifold Sub Line



Machine Category



Installed Shop Overall View



Hanwha Production Machine

- Press Machine
- Fastening Machine

- Measuring Machine
- Leak Tester

Ⓞ Press Machine



- This machine presses parts such as Pin, Seal, Bearing, Piston and so on into the case & cylinder block by controlling of the force and the distance.
- Principal components in this machine are Servo Press, Part Feeder and Oil Spray Unit. The range of press pressure is 1~7KN.

▪ Assembly Parts



Ⓞ Measuring Machine

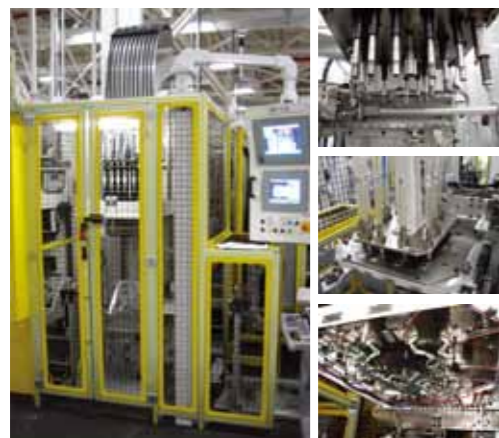


- This machine is to select the appropriate Shim grade or decide OK/NOK status in assembled parts by measuring the depth and the height between parts. It measures avg., max., min. and deviation by principal components such as LVDT(Linear Variable Differential Transformer), Servo Press and Master Work.

▪ Principal Component



Ⓞ Fastening Machine



- This machine is to fasten the Bolt, nut by controlling the torque and angle. Principal components in this machine are Nut-runner, Bolt Feeder, Robot System. Tightening Torque shall be 10~600Nm.

▪ Assembly Parts



Ⓞ Leak Tester



- This machine is for the leak test before and after assembly parts into housing and cases.

Principal components in this machine are Leak Tester, Sealing Unit and Master. Air and helium gas are used as medium for the test.

▪ Principal Component



Hanwaha Production Machine

- IPV Machine – Vision Type
- Sealant Machine
- Marking Machine
- Washing Machine
- Manual Work Station

Hanwaha Production Unit

- Pallet & Jig Fixture
- Conveyor System

📍 IPV Machine – Vision Type



- This machine checks the defect for assembled components.
- Principal components are vision system and indicator lamp.
- Cognex Insight Explorer program is used for them primarily.

📍 Sealant Machine



- This machine is to spray the Sealant on the facing surface to prevent the oil leak prior to the docking between Housing and Case.
- Principal components are Sealant Pump, X-Y Robot System.
The standard amount of spray shall be $\varnothing 2 \sim \varnothing 3.2\text{mm}$

📍 Marking Machine



- This machine is to mark the information(car model, manufactured year, serial no. etc.) on components.
- Principal components are Laser and Dot Marking Tool.

📍 Washing Machine



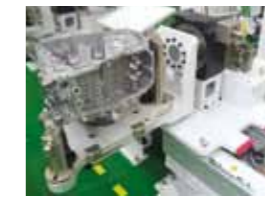
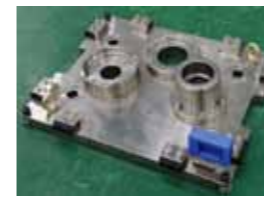
- This machine is to wash assembled transmission /engine & assembly pallet.
- Two types of washing machine(6-Axis Robot and Nozzle Type) are using.
- Working pressure is 3~7 PSI.

📍 Manual Work Station

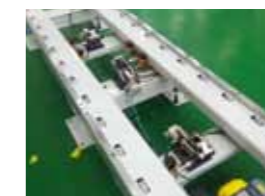


- This is for operator's manual job according to the sequence (assemble, fastening, checking etc.) without any action of actuator.
- Manual Jig, Scanner, Vision camera, Single Nut-runner and Task Sequence Lamp are the principal components . This is applied to several sections(Process, Repair, Tear Down)

📍 Pallet & Jig Fixture



📍 Conveyor System



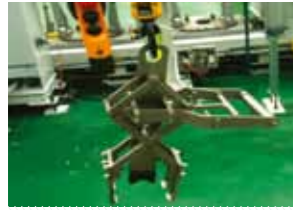
Hanwha Production Unit

• Other Units

Research & Development

- Friction Roller Torque Test Machine
- Advanced assembly machine H-FAS
- Transmission Final Test Machine
- Engine Cold Test Machine

☉ Other Units



Lift Assist



Lift Assist



Part Feeder



Hoist



Jib Crane



Robot System



Electrical panel



Electrical panel



Electric Control Rack



HMI



Sealant Pump



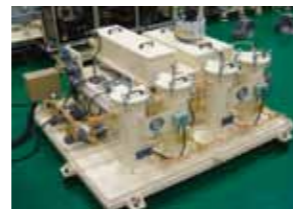
Grease Pump



Repair Cart



Pallet Cart



Oil Recycle Tank

☉ Friction Roller Torque Test Machine



- We apply the Friction Roller to line system after it passes the verification by the test machine.

☉ Advanced assembly machine H-FAS(Hanwha-Flexible Assembly System)



- Hanwha is recently developing the H-FAS(Hanwha-Flexible Assembly System) to meet the trend of Optimized equipment for mass-customization.
- Prompt reaction for adding new production model and increasing production is possible.
- The improvement of efficiency for space capacity and reduction for run off M/D are also possible by standardized equipment.
- It offers a wide choice of line concept(Loop type & H-FAS) to customers

☉ T/M Final Test Machine



☉ Engine Cold Test Machine



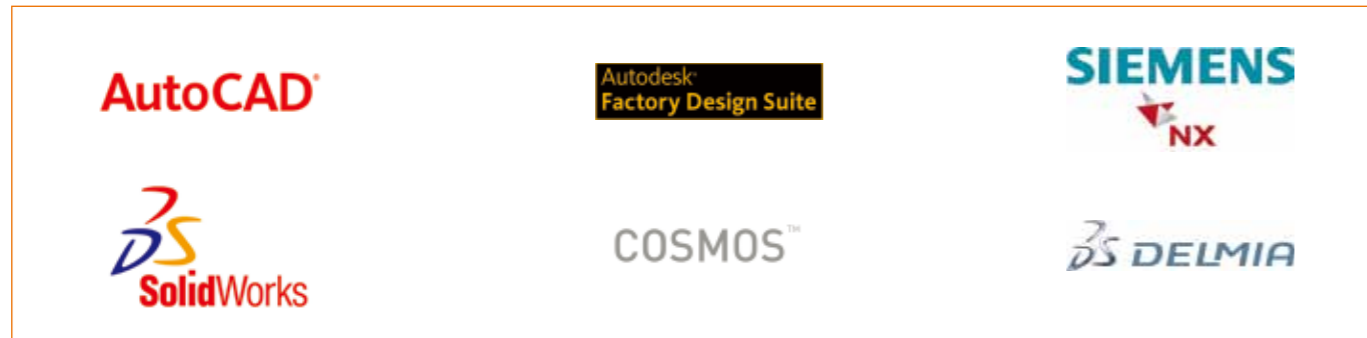
Hanwha Engineering Tool

- Mechanical Design Tool
- PLC Program Tool
- Major Tier2 Suppliers

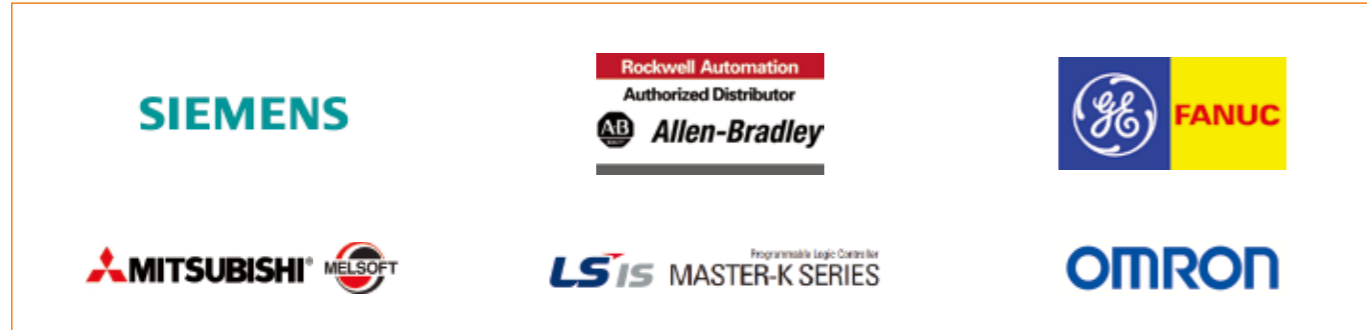
Provide Qualified Local Support

- Contact
 - Head Office
 - Hanwha TechM USA LLC.
 - Hanwha TechM (Suzhou) Co.,Ltd.

Ⓞ Mechanical Design Tool



Ⓞ PLC Program Tool



Ⓞ Major Tier2 Suppliers



Ⓞ Provide Qualified Local Support



Hanwha Headquarters in Korea | Local Mfg Company in U.S.A. | Local Mfg Company in China
 Local Support Office in Germany | Local Support Office in Michigan | Contracting Local Mfg Company

Ⓞ Contact

Head Office

- 9 Sungsanpaechong-ro, Sungsan-gu, Changwon, 641-315, South Korea
- Tel : 82-55-280-4650
- E-mail : Jaeheon.jung85@hanwha.com

Hanwha TechM USA LLC.

- 1500 E. Highwood Pontiac, MI 48340-1233 United States
- Tel : 1-248-588-1242
- Fax : 1-248-588-1246
- E-mail : usa.sales@hanwha.com

Hanwha TechM (Suzhou) Co., Ltd.

- North Side of Sigang Segment, Zhangyang Road, Zhangjiagang Economic And Technology Development Zone, Zhangjiagang City, Jiangsu Province 215600
- Tel: 86-(0)512-8959-8361
- Fax: 86-(0)512-8959-8365
- E-mail : leeyoenglan@hanwha.com

